
In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (deleted)
2. (currently amended) The composition of claim [[10]] 4 wherein

said ratio is from about 75:1 to 6:1.

3. (previously presented) The composition of claim 2 wherein

said ratio is from about 73:1 to 8:1.

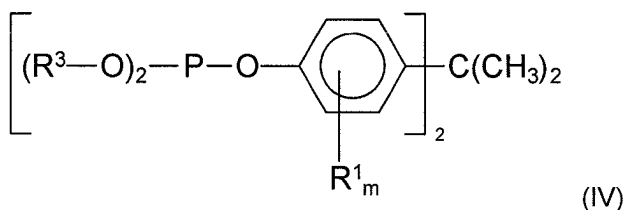
4. (currently amended) A vinyl resin stabilizer additive composition which consists of:

~~The composition of claim 10 wherein said at least two phosphite esters are selected from the group consisting of~~

at least two phosphite esters selected from the group consisting of alkyl bisphenol-A phosphites and pentaerythritol phosphites; and

a zinc additive wherein a molar ratio of P/Zn is from about 80:1 to 4:1, and further wherein said additive composition is free of calcium, cadmium, barium and tin; and further wherein

said alkyl bisphenol-A phosphite[[s]] is of formula (IV)

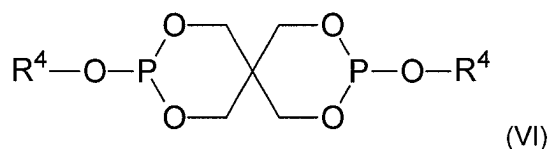


wherein

R^1 is independently selected from the group consisting of H, C_{1-18} alkyl, C_{1-18} alkoxy, halogens and

R^3 is C_{10-15} alkyl, and

m is an integral value from 0 to 5 inclusive, and wherein
said pentaerythritol phosphite[[s]] is of formula (VI)

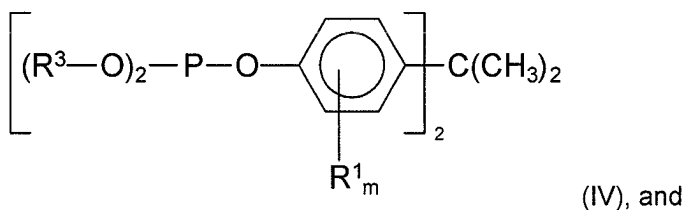


wherein

R⁴ is selected from the group consisting of C₈₋₁₈ alkyl, C₆₋₃₀ aryl, C₆₋₃₀ fused aryl rings, C₇₋₃₅ alkylaryl, C₇₋₃₅ arylalkyl and substituted derivatives thereof wherein the substituents are selected from the group consisting of halogens, hydroxyl, C₁₋₄ alkyl and C₁₋₄ alkoxy.

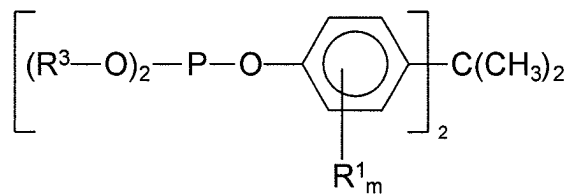
5. (previously presented) The composition of claim 4 wherein a percentage weight loss of said additive composition as measured as a difference between a start and an end weight of said composition as measured after exposure to two hours at 110°C, is less than 1% by weight.
6. (previously presented) The composition of claim 5 wherein a percentage weight loss is less than 0.5% by weight.
7. (currently amended) The composition of claim 4 wherein

a first phosphite ester is C₁₀₋₁₅ alkyl bisphenol-A phosphites of formula (IV)



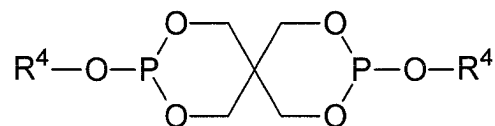
at least one second phosphite ester is selected from the group consisting of

C₁₀₋₁₅ alkyl bisphenol-A phosphites of formula (IV)



(IV), and

[[C₈₋₁₅]] pentaerythritol phosphites of formula (VI)



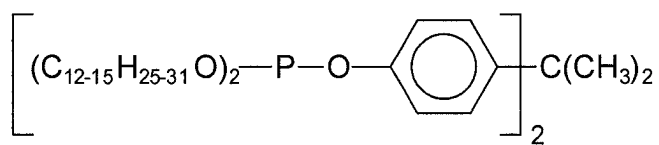
(VI)

and wherein R¹, R³ and R⁴ are as previously defined.

8. (deleted)

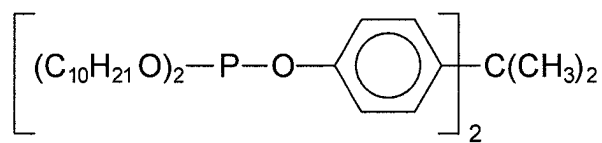
9. (currently amended) The composition of claim [[10]] 4 wherein said [[at least two]] bisphenol-A phosphite ester[[s]] is selected from the group consisting of

C₁₂₋₁₅ bisphenol-A phosphite of formula (VIII)



(VIII), and

C₁₀ bisphenol-A phosphite of formula (IX)



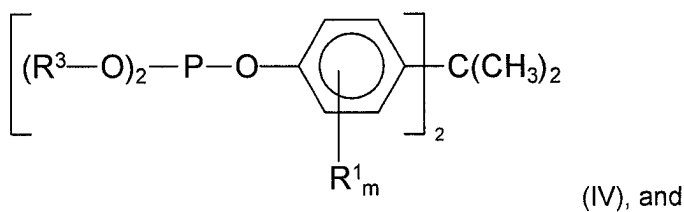
(IX)

10. (deleted)

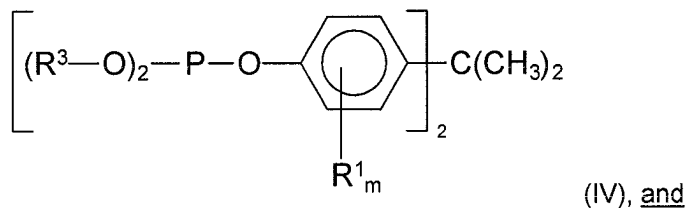
11. (currently amended) The composition of claim [[10]] 4 wherein a level of zinc is approximately 50 to 800 ppm zinc per 100 parts resin.

12. (original) The composition of claim 11 wherein said level of zinc is approximately 100 to 500 ppm zinc per 100 parts resin.
13. (original) The composition of claim 12 wherein said level of zinc is approximately 100 to 250 ppm zinc per 100 parts resin.
14. (previously presented) The composition of claim 11 wherein said resin is flexible polyvinyl chloride.
15. (deleted)
16. (currently amended) A halogenated vinyl resin stabilizer additive composition which consists of:

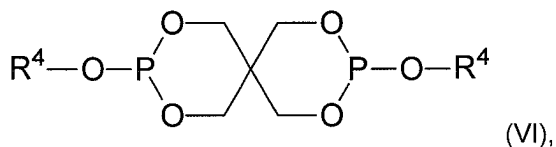
at least two phosphite esters, ~~and further~~ wherein a first phosphite ester is an alkyl bisphenol-A phosphite[[s]] of formula (IV)



at least one second phosphite ester which is selected from the group consisting of
alkyl bisphenol-A phosphites of formula (IV)



[[C₈₋₁₅]] pentaerythritol phosphites of formula (VI)



and wherein

R¹ is independently selected from the group consisting of H, C₁₋₁₈ alkyl, C₁₋₁₈ alkoxy, halogens and

R³ is C₁₀₋₁₅ alkyl, and

R⁴ is selected from the group consisting of C₈₋₁₈ alkyl, C₆₋₃₀ aryl, C₆₋₃₀ fused aryl rings, C₇₋₃₅ alkylaryl, C₇₋₃₅ arylalkyl and substituted derivatives thereof wherein the substituents are selected from the group consisting of halogens, hydroxyl, C₁₋₄ alkyl and C₁₋₄ alkoxy, and

m is an integral value from 0 to 5 inclusive, and

a zinc additive for said additive composition wherein a molar ratio of P/Zn is from about 80:1 to 4:1; and

said additive composition is free of calcium, cadmium, barium and tin.

17. (previously presented) The composition of claim 16 wherein a level of zinc is approximately 50 to 800 ppm zinc per 100 parts resin.
18. (previously presented) The composition of claim 17 wherein said level of zinc is approximately 100 to 500 ppm zinc per 100 parts resin.
19. (previously presented) The composition of claim 18 wherein said level of zinc is approximately 100 to 250 ppm zinc per 100 parts resin.
20. (previously presented) The composition of claim 16 wherein said resin is flexible polyvinyl chloride.
21. (deleted)
22. (currently amended) The composition of claim ~~[[21]]~~ 24 wherein
said ratio is from about 75:1 to 6:1.

23. (previously presented) The composition of claim 22 wherein

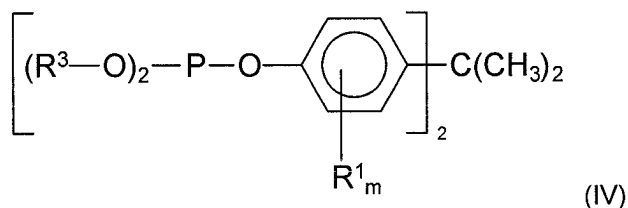
said ratio is from about 73:1 to 8:1.

24. (currently amended) The composition of claim 21 wherein said at least two phosphite esters are selected from the group consisting of An essentially toxic-metal free liquid additive composition for use as at least a partial replacement of toxic metal stabilizer additive compositions for use in vinyl-containing resins, wherein the essentially toxic-free composition consists of:

at least two phosphite esters selected from the group consisting of alkyl bisphenol-A phosphite esters and alkyl substituted derivatives thereof, and pentaerythritol phosphite esters; and

a zinc additive wherein a molar ratio of P/Zn is from about 80:1 to 4:1; and further wherein

said alkyl bisphenol-A phosphite[[s]] is of formula (IV)



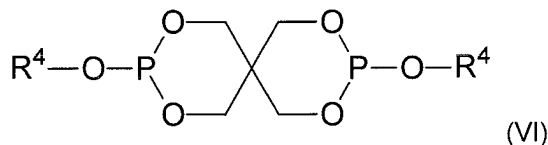
Wherein

R¹ is independently selected from the group consisting of H, C₁₋₁₈ alkyl, C₁₋₁₈ alkoxy, halogens and

R³ is C₁₀₋₁₅ alkyl, and

m is an integral value from 0 to 5 inclusive, and

said pentaerythritol phosphite[[s]] is of formula (VI)



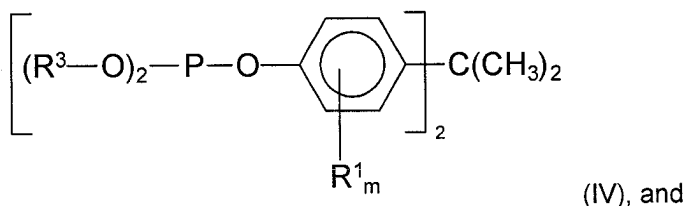
wherein

R⁴ is selected from the group consisting of C₈₋₁₈ alkyl, C₆₋₃₀ aryl, C₆₋₃₀ fused aryl rings, C₇₋₃₅ alkylaryl, C₇₋₃₅ arylalkyl and

substituted derivatives thereof wherein the substituents are selected from the group consisting of halogens, hydroxyl, C₁₋₄ alkyl and C₁₋₄ alkoxy.

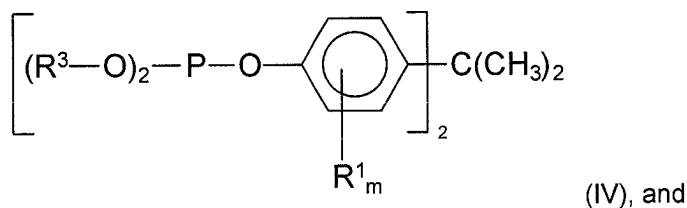
25. (previously presented) The composition of claim 24 wherein a percentage weight loss of said additive composition as measured as a difference between a start and an end weight of said composition as measured after exposure to two hours at 110°C, is less than 1% by weight.
26. (previously presented) The composition of claim 25 wherein a percentage weight loss is less than 0.5% by weight.
27. (previously presented) The composition of claim 24 wherein

a first phosphite ester is C₁₀₋₁₅ alkyl bisphenol-A phosphites of formula (IV)

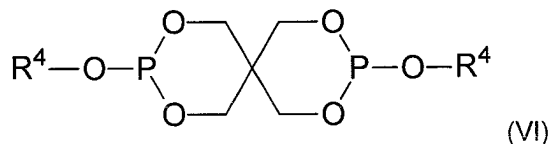


at least one second phosphite ester is selected from the group consisting of

[[C₁₀₋₁₅]] alkyl bisphenol-A phosphites of formula (IV)



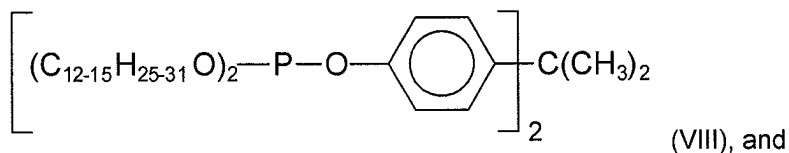
C₈₋₁₅ pentaerythritol phosphites of formula (VI)



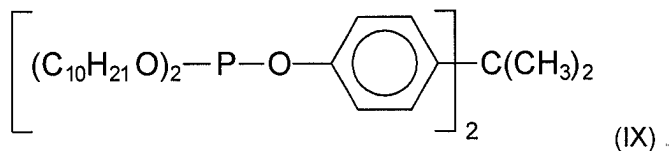
and wherein R¹, R³ and R⁴ are as previously defined.

28. (currently amended) The composition of claim [[21]] 24 wherein said bisphenol-A phosphite ester is selected from the group consisting of

C₁₂₋₁₅ bisphenol-A phosphite of formula (VIII)

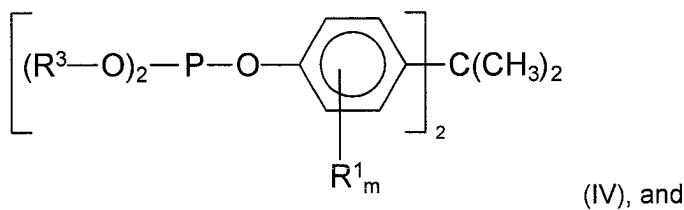


C₁₀ bisphenol-A phosphite of formula (IX)



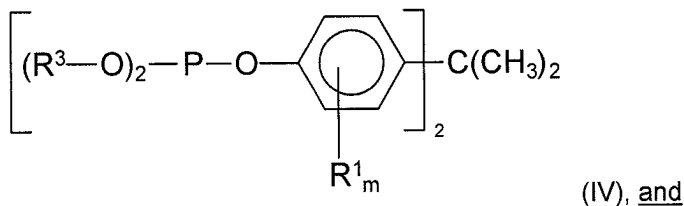
29. (currently amended) The composition of claim [[21]] 24 wherein a level of zinc is approximately 50 to 800 ppm zinc per 100 parts resin.
30. (previously presented) The composition of claim 29 wherein said level of zinc is approximately 100 to 500 ppm zinc per 100 parts resin.
31. (previously presented) The composition of claim 30 wherein said level of zinc is approximately 100 to 250 ppm zinc per 100 parts resin.
32. (previously presented) The composition of claim 29 wherein said resin is flexible polyvinyl chloride.
33. (currently amended) An additive composition for polyvinyl chloride resin which consists of:

at least two phosphite esters, ~~and further~~ wherein a first phosphite ester is an alkyl bisphenol-A phosphite[[s]] ester of formula (IV)

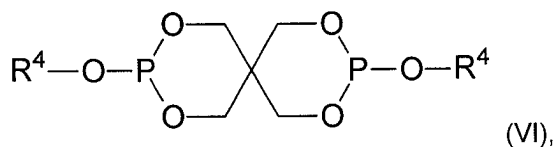


at least one second phosphite ester which is selected from the group consisting of

alkyl bisphenol-A phosphite[[s]] ester of formula (IV)



pentaerythritol phosphite[[s]] esters of formula (VI)



and wherein

R^1 is independently selected from the group consisting of H, C_{1-18} alkyl, C_{1-18} alkoxy, halogens and

R^3 is C_{10-15} alkyl, and

R^4 is selected from the group consisting of C_{8-18} alkyl, C_{6-30} aryl, C_{6-30} fused aryl rings, C_{7-35} alkylaryl, C_{7-35} arylalkyl and substituted derivatives thereof wherein the substituents are selected from the group consisting of halogens, hydroxyl, C_{1-4} alkyl and C_{1-4} alkoxy, and

m is an integral value from 0 to 5 inclusive, and

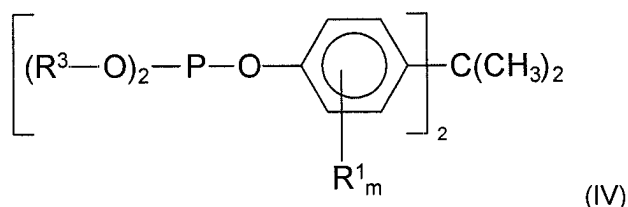
a zinc additive for said additive composition wherein a molar ratio of P/Zn is from about 80:1 to 4:1.

34. (previously presented) The composition of claim 33 wherein a level of zinc is approximately 50 to 800 ppm zinc per 100 parts resin.

35. (previously presented) The composition of claim 34 wherein said level of zinc is approximately 100 to 500 ppm zinc per 100 parts resin.

36. (previously presented) The composition of claim 35 wherein said level of zinc is approximately 100 to 250 ppm zinc per 100 parts resin.
37. (previously presented) The composition of claim 34 wherein said resin is flexible polyvinyl chloride.
38. (currently amended) The composition of claim 33 wherein said at least two phosphite esters are selected from the group consisting of

C₁₀₋₁₅ alkyl bisphenol-A phosphites of formula (IV)



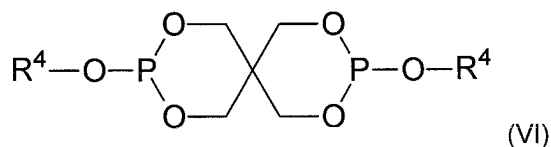
wherein

R¹ is independently selected from the group consisting of H, C₁₋₁₈ alkyl, C₁₋₁₈ alkoxy, halogens and

R³ is C₁₀₋₁₅ alkyl, and

m is an integral value from 0 to 5 inclusive, and

[[C₈₋₁₅]] pentaerythritol phosphites of formula (VI)

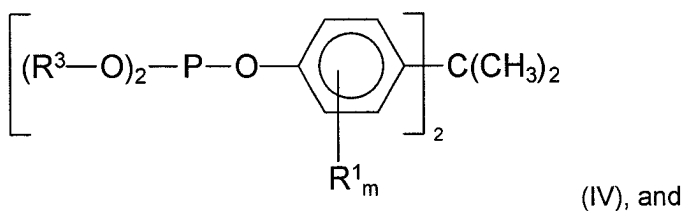


wherein

R⁴ is selected from the group consisting of C₈₋₁₈ alkyl, C₆₋₃₀ aryl, C₆₋₃₀ fused aryl rings, C₇₋₃₅ alkylaryl, C₇₋₃₅ arylalkyl and substituted derivatives thereof wherein the substituents are selected from the group consisting of halogens, hydroxyl, C₁₋₄ alkyl and C₁₋₄ alkoxy.

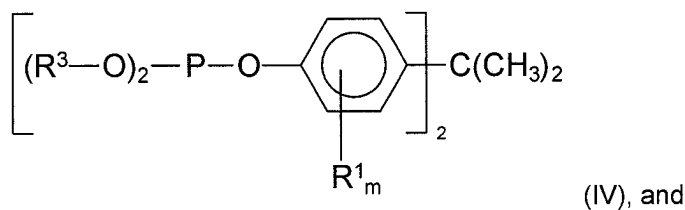
39. (previously presented) The composition of claim 38 wherein a percentage weight loss of said additive composition as measured as a difference between a start and an end weight of said composition as measured after exposure to two hours at 110°C, is less than 1% by weight.
40. (previously presented) The composition of claim 39 wherein a percentage weight loss is less than 0.5% by weight.
41. (previously presented) The composition of claim 38 wherein

a first phosphite ester is C₁₀₋₁₅ alkyl bisphenol-A phosphites of formula (IV)

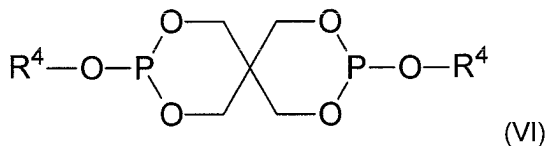


at least one second phosphite ester is selected from the group consisting of

C₁₀₋₁₅ alkyl bisphenol-A phosphites of formula (IV)



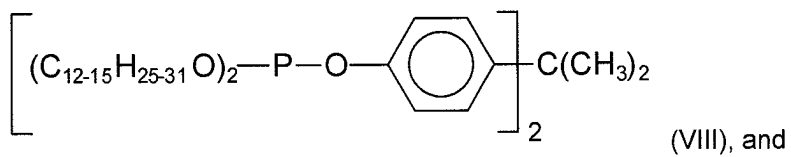
C₈₋₁₅ pentaerythritol phosphites of formula (VI)



and wherein R¹, R³ and R⁴ are as previously defined

42. (currently amended) The composition of claim 41 wherein said bisphenol-A phosphite ester is selected from the group consisting of

C₁₂₋₁₅ bisphenol-A phosphite of formula (VIII)



C₁₀ bisphenol-A phosphite of formula (IX)

